

WHAT IS CLAIMED IS:

1. A growth-selective structure of light-emitting diode (LED), comprising:
  - a nonconductive substrate;
  - an oxidation layer comprising a patterned silicon dioxide deposited on the substrate to form a plurality of isolated blocks having a large width greater than 30  $\mu\text{m}$  and a small width smaller than 5  $\mu\text{m}$  respectively, the blocks being separated by a gap of 8-12  $\mu\text{m}$ ;
  - a buffer layer of GaN (gallium nitride) III-V group deposited on the oxidation layer of the isolated blocks having the smaller width to form a unified body;
  - an n-GaN layer formed on the buffer layer;
  - an active layer of GaN III-V group formed on the n-GaN layer;
  - a p-GaN layer formed on the active layer;
  - an n-ohmic-contact electrode formed in an n-electrode forming section on the n-GaN layer, the n-electrode forming section being formed by etching the p-GaN layer, the active layer, and the n-GaN layer to have the n-GaN layer exposed, then, a Ti/Al metal being deposited on the n-GaN layer for forming the n-ohmic-contact electrode;
  - a p-ohmic-contact electrode made of Ni/AuBe formed on the p-GaN layer, having a thickness of 50-200 $\text{\AA}$ ; and
  - a plurality of soldering pads formed on the p- and n-ohmic-contact electrode, the soldering pad being substantially a stack layer in 3-1  $\mu\text{m}$  thick, formed by overlapping 5 metallic layers (Ti/Pt/Al/Ti/Au) together.
2. The growth-selective structure of LED according to Claim 1, wherein a lateral-growth technology applied is based on adjustment of the mixing ratio among hydrogen ( $\text{H}_2$ ), ammonia ( $\text{NH}_3$ ), and trimethyl gallium (TMG).
3. The growth-selective structure of LED according to Claim 1, wherein the thickness of the soldering pad is 2  $\mu\text{m}$ .
4. The growth-selective structure of LED according to Claim 1, wherein the thickness of the p-ohmic-contact electrode is 100 $\text{\AA}$ .

5. The growth-selective structure of LED according to Claim 1, wherein the gap is 10  $\mu\text{m}$ .
6. The growth-selective structure of LED according to Claim 1, wherein the material of the n-GaN layer is a silicon-doped GaN compound of III-V group.
7. The growth-selective structure of LED according to Claim 1, wherein the material of the p-GaN layer is a magnesium-doped GaN compound of III-V group.